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ABSTRACT

Group contingencies is a technology for using peers to influence behavioral change through contingencies; the use of contingent interdependent group rewards for specific group behaviors has been of interest to behavioral researchers. To sort out the effects on quiz scores and peer social interaction (PSI) of group contingencies based on academic achievement (an academic contingency) and on social/group process performance (a social contingency), two studies were implemented for 7 months in an eighth grade English class and a sixth grade reading class. The academic (group) contingency, based on individually accountable task achievement, was investigated using a Baseline 1, Task Interdependence, Social Contingency 1, Package (both social and academic group contingency), Social Contingency 2, Baseline 2, Postchecks reversal design, and both no treatment and no contingency control groups. Two students were targeted who were both academically deficient and socially isolated from their peers. Results suggested quiz scores were highest when both social and academic (package) contingency was in effect. PSI for the isolated students improved with each additional contingency, peaked in the Package condition, and was maintained at 6-week followup. In the second experiment, social (group) contingency baseed upon individually accountable demonstration of group process skills was examined as each student in a group session was required to demonstrate specified social skills. This experiment was evaluated using a Baseline 1, Task Interdependence, Academic Contingency 1, Package, Academic Contingency 2, Baseline 2, Postchecks reversal design and targeted four students who were socially isolated from their peers and/or disruptive in class. The results indicated that not a single intervention improved quiz scores for all students. PSI improved for all students in the no contingencies and the package conditions. There was particularly strong maintenance of improved social functioning at followup. Support was found for the use of group contingencies in improving both academic and social functioning and the Package (both social and academic group contingencies condition) was found to be the most powerful intervention in improving academic and social functioning. (Author/NRB)

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ISOLATED STUDENTS IN SECONDARY SCHOOLS:
COOPERATIVE GROUP CONTINGENCIES AND SOCIAL SKILLS TRAINING

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ABSTRACT

This study consisted of two experiments, the purpose of which was to examine the effects of group contingencies within a cooperative learning structure in middle school classrooms. The experiments examined the effects of group contingencies based on academic achievement (Academic Contingency) and the effects of group contingencies based on social/interpersonal skills functioning (Social Contingency) upon quiz scores and peer social interaction (PSI). The experiments were implemented for seven months in an 8th grade English class and a 6th grade reading class by three teachers enrolled in their second year of a Master's program in special education.

In Experiment I, the unique effect of an academic (group) contingency based on individually accountable task achievement (at least 70% per group member) was examined using an A, B, C, E, C, A, G(Baseline 1, Task Interdependence, Social Contingency 1, Package, Social Contingency 2, Baseline 2, Postchecks) reversal design and both no treatment and no contingency control groups. Two students were targeted who were both academically deficit and socially isolated from their peers. Results suggested quiz scores were highest when both a social+academic contingency (Package condition) was in effect. PSI for these isolated students improved with each additional contingency, peaked in the Package condition, and was maintained at improved levels after the six-week followup (Postchecks). A small reversal effect for PSI could be observed for one of the two targeted students.

In Experiment II, the unique effect of a social (group) contingency based upon individually accountable demonstration of group process (social) skills was examined as each student in a group session was required to demonstrate three out of four specified social skills (i.e., contributing, directing, praising, checking). This experiment was evaluated using an A, B, D, E, D, A, F (Baseline I, Task Interdependence, Academic Contingency 1, Package, Academic Contingency 2, Baseline 2, Postchecks) reversal design and targeted four students who were both socially isolated from their peers and/or disruptive in class. Results from this experiment indicate there was not a single intervention that improved quiz scores for all students. PSI improved for all students under both task interdependence (no contingencies) and Package (both contingencies) conditions. Though only small reversal effects were evident, this experiment was noted for particularly strong maintenance of improvements in social functioning during the Postchecks (six-week followup) conditions.

Results from these experiments indicate:

1. Support for the use of group contingencies in improving both academic and social functioning.

2. The Package (both social and academic group contingencies) condition was the most powerful intervention in improving academic and social functioning.

3. Skills were maintained at Postchecks without groups or contingencies and may result from students having learned skills at accessing peers in their classroom.

4. Teachers should consider use of contingencies based on interpersonal functioning so that the positive effects of group learning can be actualized in their classrooms.

INTRODUCTION

School resources include both the human and material elements that can influence achievement and socialization (Johnson, 1979). Among the most important resources within the school enviornment, are peers who may encourage educational goals and appropriate social behavior (Johnson and Johnson, 1980). The peer group is one of the largest agents for behavioral change in dealing with socialization and behavior problems in children (Greenwood and Hops, 1981). Research has affirmed that the role of peers is of critical question for the teacher is how one can guide his/her influence toward facilitating academic achievement and reducing inappropriate behavior, rather than inhibiting academic achievement and encouraging inappropriate behavior.

A technology for using peers to influence behavioral change through contingencies is described in the literature as group contingencies. Litow and Pumroy (1975) reviewed the leterature and outlined three arrangements of group reinforcement contingencies in classrooms: independent, dependent, and interdependent. Though all three arrangements have been demonstrated as effective, the most consistent positive social and academic effects were associated with interdependent group contingencies (Greenwood and Hops, 1981; Litow and Pumroy, 1975). Central to Litow and Pumroy's behavioral conceptualization was a focus on the teachers' careful arrangement of response contingencies which were in effect simultaneously for all group members and which were earned only when a group reached a pre-set criterion. Thus, the use of contingent interdependent group rewards for specific group behaviors has been a priority for behavioral researchers.

Paralleling these findings from more of a social psychological perspective

have been researchers investigating cooperative learning. Drawing upon the work of Deutsch (1949), Johnson and Johnson (1975) have differentiated among three types of learning (goal) structures that teachers may employ in their classes: Cooperation, Competition, and Individualistic. A cooperative goal structure exists when there is positive goal interdependence, an "I win if you win" or "We both can win" instructional set and consequent attitude among students. This can result in a teaching situation which utilizes the talents of peers in support of teacher instructional efforts. Whereas competitive and individualistic learning situations serve to discourage peer contributions to teaching and learning (e.g., "Don't copy his paper!" or "Do your own work!"), cooperative learning is explicitly designed to take advantage of peer resources. While researchers have disagreed on what factors may contribute to cooperative learning and on what a consensus operational definition might be for cooperative learning, there has been substantial agreement concerning its powerful positive effect upon academic and social outcomes in classrooms (Sharan, 1980; Johnson, Maruyama Johnson, & Skon, 1981; Slavin, 1983).

Though not all cooperative learning models use rewards as a primary method of functionally inducing interdependence among students, a recent review by Slavin (1983) indicates they may be an important factor in its successful implementation. Slavin suggested that rewards in groups are most effective when students are held individually accountable for their own contribution (e.g., their own test grade, their own rated score). In his analysis of studies, positive achievement results were noted for cooperative learning 88% of the time when individual accountability and rewards were employed. The success rate was only 25% for studies not using both of these components. The results are promising in so far as integrating the behavioral and social psychological literatures, since it was the group contingencies that accounted for differences.

The effects of group contingencies have not only proved to be powerful procedures for increasing academic behavior, but have also been effective for increasing social interaction. Various studies have been conducted which targeted socially isolated children while implementing group contingency procedures to increase positive interactions (Greenwood, Todd, Hops, and Walker, 1981; Nevin, Johnson, and Johnson, 1982; Hops, et.al., 1978; Frankosky and Sulzer-Azaroff, 1978). These studies used group contingency procedures to increase opportunities for withdrawn children to interact, to encourage students to complete academic tasks while working in small groups, and to decrease negative interaction among students. A critical component of these and other studies using group contingency procedures was the provision of the appropriate conditions (antecedents) which enabled the desired social behaviors to occur. Within the context of cooperative learning groups the critical antecedents would include the placement of students in small working groups to provide opportunities for modeling, prompting and shaping new behavior. By setting up situations whereby peers act as antecedents, and then using reinforcers delivered contingently upon these peer interactions, one enhances the opportunities for students to learn how to interact appropriately.

The critical components of cooperative learning groups, therefore, are not only the antecedents, but also the consequences of their academic or social group behavior. Should teachers really expect that students will feel "linked" to each other when they work interdependently on a task without group contingencies for appropriate responses being available? The studies reported in this paper examine the effects of group contingencies within a cooperative learning structure by sorting out the effects of an academic and social skill contingency upon academic behavior and social interaction. The purpose was to examine which behavior would be performed under the specific treatment

conditions; would an academic contingency increase academic behavior and would a social skill contingency increase social interactive behavior? Additionally, a package condition including both an academic and social skill contingency was introduced. Would accounting for both task related and group process behaviors provide an incremental improvement in student functioning over the use of a single contingency?

This study was composed of two parallel experiments conducted by three teachers over a seven month period which attempt to sort out the effects of group contingencies based on academic achievement (an academic contingency) and the effects of group contingencies based on social/group process performance (a social contingency). In Experiment I the unique effect of an academic contingency based on individual task achievement within cooperative learning groups was examined.

EXPERIMENT I

THE EFFECT OF ACADEMIC GROUP CONTINGENCIES IN COOPERATIVE LEARNING ON VOCABULARY TEST SCORES AND PEER SOCIAL INTERACTION

SETTING

This experiment (as well as Experiment II) was done in a small upper middle class community about 15 miles from Boston in a middle school (grades 6-8) with 500 students. It took place in an 8th grade English class with 30 students. The class was considered heterogeneous with students of various ability levels. Four of the students received special educational (SPED) services. Two parallel 8th grade classes with similar student populations (Class 2, N=27 SPED=3, Class 2, N=26 SPED=3) participated as control groups in this study. All three classes were taught by the same teacher using the same materials. The teacher was trained for 1 year in principles of behavior

analysis and cooperative learning and had implemented them during his previous school year while enrolled in a two year graduate program in special education.

TARGET STUDENTS

Of the 30 students in the experimental class a total of 2 were targeted as both academic non-achievers and socially isolated from their peers. Information used to target students came from:

1) Teacher Questionnaire - in which a class list was distributed to teachers who previously taught these 8th grade students and who were asked to rate each student by using a scale of 1=below average, 2= average, 3=above average, according to, a) academic, b) cooperative, c) no interaction, or d) isolate behavior.
2) Prebaseline Measures of Peer Social Interaction - in which the observers conducted time sampled normative observations for approximately ten students which indicated whether students were engaged in interactions with others which were, a) task oriented, b) maintenance oriented, c) no interaction, or d) off task - negative interaction.

Based upon these two measures two students were selected who were most in need of learning the academic and social skills needed for collaborating with their classmates. The students were Kristi, a 14 year old girl and Rene, a 13 year old boy. Both were about 1½ years below grade level and were identified special needs students.

DEPENDENT MEASURES

There were four measures that were taken: 1) Academic Percentage, 2) Peer Social Interaction, 3) Sociometric Rating, and 4) Self-Assessment.

1) Academic Percentage - Data were taken each week on an individual vocabulary quiz given on Fridays to each student. The quiz consisted of

10-15 words that were assigned the previous week and followed the course curriculum. Difficult vocabulary words were distributed equally among each of the conditions of this study. Data were recorded in the teacher's rank book for all students (N=30) in the experimental class, and for all students in the two control classes (N=26,27).

2) Peer Social Interaction (PSI) - was composed of four qualitative behaviors:

a) Task oriented - including summarizing, directing, checking, information seeking, on task statements, and tutoring;

b) Maintenance oriented - including praise, support, encouragement, active listening, i.e., eye contact and nodding;

c) No interaction - including physical separation of self from others, lack of eye contact, no verbalization, contact with adult figure; and

d) Off task - negative interaction - including off task statements, putdowns, hostile statements, threatening gestures, and statements.

Targeted students' (N=2) PSI was observed and measured once per week. PSI was measured using a combination time-sample interval measurement system. A 20 minute free choice period was given each week in which all students were asked to study (non-vocabulary) material on their own or together. It was clear at the beginning of this period that students were free to choose. During this 20 minute period, each targeted student's behavior was sampled once per two minutes for a total of ten observations per student. Each observation lasted ten seconds. If more than one type of interaction were emitted during the observation, only the first type was recorded.

Reliability was determined in the following manner. Two independent observers recorded scores on their independent data sheets. A cueing tape indicated to observers when recordings were to be taken. Reliability was taken at least twice during baseline and once per condition thereafter.

It was calculated on a trial by trial basis with an 80% criterion set before data were collected for inclusion in this study.

3) Sociometric Rating - A sociometric rating by all members of the class for the target students was obtained at three points in the study: a) during the initial baseline, b) after the third experimental (Package) condition, and c) after the Postchecks condition. The sociometric consisted of questions in Table 1.

4) Self Assessment - A self-assessment measure of how students enjoyed their class vocabulary exercises was obtained for the targeted students (Means for the entire class) at the same three junctures described above (Baseline, Package, Postchecks). This scale can be observed in Table 2.

TREATMENT CONDITIONS

In this experiment, the experimental class was exposed to a reversal research design (A, B, C, E, C, A, F) that may be observed in Table 3. One (No Contingencies) control class was exposed to Baseline (4 sessions) and then Task Interdependence (17 sessions). The second control class (No Treatment) was exposed to Baseline conditions (21 sessions) throughout. The following are specific descriptions of each of the experimental class conditions.

A) Baseline 1

Data were collected for a period of four weeks during the baseline period. Throughout this phase, vocabulary words were assigned on Monday, were reviewed by individuals for 20 minutes on Thursday in preparation for a 15 minute quiz on Friday. During this condition, all instructions, feedback, and rewards were presented to individuals. No contingent reinforcement was used other than individual grades recorded in the teacher's rank book. The weekly assignment of PSI was taken on Tuesday during a 20 minute period when students were given

a non-vocabulary assignment and given a choice stated by the teacher in the following manner:

"You may work by yourselves or with up to three other people in a group to review these materials. It is up to you to make your own choice."

This measure continued to be taken on Tuesdays during all experimental conditions.

B) Task Interdependence

The weekly sequence of activities remained the same except for the introduction of task interdependent cooperative learning groups. Instead of the individual review held for 20 minutes on Thursdays, students studied together in these teacher structured cooperative learning groups. Groups were designed to be heterogenous with 3-4 students and based on a three tiered system which included students who were: 1) strong academically and socially, 2) strong academically or socially, and 3) neither strong academically nor socially. The two teachers involved with this class established the groups based on: a) prior quiz grades, b) recommendations from former teachers, c) quantity and quality of verbal interaction in Baseline, and d) student sociometric results. Each targeted student was assigned to a different group and neither best friends nor worst enemies were grouped together.

Teachers introduced Task Interdependence during a period (40 minutes) which informed students that vocabulary review would now occur in groups and that it was the group's responsibility to make sure everyone could master the material. Group members were placed in a short team-building exercise used to provide a positive experience for members. All students were asked to sign each written product submitted to the teacher on review day. The teacher provided little more than supportive feedback for turning in this product. No special skills were taught for group process, nor were any special rewards offered for student or group participation in this condition.

C) Social Contingency 1

During this condition the teacher added two features designed to improve group process in the already functioning task/goal interdependent cooperative learning groups.

1) The teacher took a 40 minute period to explain the importance of four group behaviors that help all group members to do a better job. These included: 1) contributing to discussion by sharing ideas and information, b) directing by keeping the group on task and asking questions related to task, c) praising/encouraging by making positive comments, making good eye contact, and facilitating consensus in the group, and d) checking by making sure everyone in the group understands what is being taught.

Students were informed that they would be observed by teachers who would float from group to group with monitoring checklists that had each class member's name on it (see Table 4).

2) In addition, students were informed that a group contingency would be in effect. Students were told that their exhibition of group "social behaviors" would be rewarded in the following way. If each group member was observed to demonstrate three out of four group social skills during vocabulary review on Thursdays, that group could receive an additional two points bonus per group member. Teachers spent the last 10 minutes of each class in "processing" activities with groups or the entire class, noting particularly "good" as well as "poor" examples of group social skills.

E) Package

During this condition students remained in task interdependent cooperative learning groups that were rewarded for individually accountable demonstration of social (group process) skills. In addition, students were informed that groups were now able to earn bonus points based upon each group member's

demonstration of academic competence (at least 70%) on the Friday quiz. Thus, teachers informed their students in the following manner:

> "Some of you may wonder how you ended up in your vocabulary groups. Actually, they were made up in as fair a way as possible with each group having a combined quiz grade of about 70%. From now on, your group will receive an opportunity to earn the following bonus. If all members of your group get 70% or more on your individual Friday quiz, each group member will receive two extra points toward your quiz grade." If any member of a group failed to meet the 70% criterion for a test, then no one in the group was eligible for bonus points.

C) Social Contingency 2

The academic contingency was removed thus returning to the Social Contingency condition. Students were informed they had done so well that they no longer required an academic contingency.

A) Baseline 2

The task interdependent cooperative learning groups and social contingencies were removed with students given the explanation that they had done superior work and neither groups nor special bonuses were necessary any more. Only individual grades were in effect.

G) Postchecks

Two sessions were recorded as a six week followup after Baseline 2.

RESULTS (EXPERIMENT I)

Interobserver spotchecks of academic permanent-product quizzes suggested that these were consistently and accurately graded by the teacher. Only two grade discrepancies were found in the course of the experiment. For Peer Social Interaction (PSI) a total of thirteen measures of agreement were taken for

Kristi and Rene. Agreement while observing Kristi ranged from 80% to 100%, with a mean of 92.3%. Agreement while observing Rene ranged from 90% to 100%, with a mean of 96.1%.

Quiz Scores

Results from quiz scores given to the three classes are available for inspection in Figure 1.

Insert Figure 1

The results of the No Treatment Control group which received neither Task Interdependence nor contingencies suggest there was little variation in quiz scores from condition to condition (range =76.5% to 79.0%). In the class where Task Interdependence was introduced with no contingencies, a slight elevation in quiz scores (1 to 2 points) over Baseline 1 was evident. It was the experimental class which received contingencies in the form of a Social Contingency and a Package (Social and Academic) Contingency which showed the greatest gains. Though classes seemed to gain through the Social Contingency (gain = 1 to 2 points) the highest scores were found in the Package Contingency (mean = 84.8%) with scores about eight points higher than Baseline 1. A reversal effect was apparent when teachers removed the Academic Contingency (part of the Package Contingency) and returned to Social Contingency 2. Results from Baseline 2 suggest that only the experimental class gained in scores over Baseline 1 (gain = 4.1 points). The results were replicated for the target learners. These students started at low Baseline Quiz Scores (means = 35.0 and 39.5) but gained with each contingency. Highest means (82.0 and 73.0) were in the Package condition and Postchecks found students averaging about 17 points over Baseline 1.

Peer Social Interaction

For PSI both Kristi and Rene demonstrated high Baseline 1 rates of

Insert Fignre 2

non-interaction (No PSI). Rene actually was a complete isolate during Baseline 1 (100% No PSI) while Kristi showed 70% PSI. With Task Interdependence, Kristi actually got worse and Rene improved only slightly. With the Social Contingency 1, Kristi showed demonstrable gains in both Task (28%) and Maintenance (25%) PSI, but Rene showed no change. With the addition of an Academic Contingency (in the Package condition), Rene showed substantial improvement in his group process (Task gain = 35%, Maintenance gain = 14%) functioning and Kristi demonstrated further improvement (Task gain = 5.0%, Maintenance gain 12.5%). A small reversal effect can be seen for Kristi in the C_1-E-C_2 return to Social Contingency 2, but none is apparent for Rene. Social behaviors appeared to be maintained at improved (compared with Baseline 1) levels in both Baseline 2 after the six-week followup (Postchecks).

OTHER MEASURES

The sociometric analysis of the targeted students in this class (see Table 5) indicates that both Kristi and Rene were accepted by their peers at higher frequencies after the Package condition and during the Postchecks condition. Results from the self-assessment (see Table 6) given to all students in the the class indicate that student attitude toward their vocabulary lessons and their own participation in these lessons improved substantially in the Package condition and was maintained at a high level in the Postchecks condition.

EXPERIMENT II

THE EFFECT OF GROUP CONTINGENCIES OF SOCIAL BEHAVIOR IN COOPERATIVE LEARNING ON VOCABULARY TEST SCORES AND PEER SOCIAL INTERACTION

In Experiment II the unique effect of a social contingency based on individually accountable demonstration of social skills within cooperative learning groups was examined.

SETTING

This experiment took place in a 6th grade reading class with 19 students. The class was required for students in the "B" track of the middle school. This was the lowest level regular education 6th grade reading class, averaging approximately one year below grade level. Of the 19, six students had been found eligible for special education and had educational plans. These students were integrated within the mainstream class. No control class could be identified in this experiment. The class was taught by two teachers, a regular English teacher, and a special needs resource teacher. Both teachers had employed cooperative learning methodologies during their previous year teaching and while enrolled in a two year graduate program in special education.

TARGET STUDENTS

Students were targeted in the same manner as in Experiment I using both a Teacher Questionnaire and a Prebaseline Measure of Social Interaction. In this class however, nearly all the students had a uniformly low history of academic achievement. Because of this lack of variance, less priority was given to academic achievement as a piece of the selection criteria. In all, four students were targeted, two girls: Mary, age 11 and Ron, age 14, and two boys: David, age 12 and Erik, age 11. All received special education

services for deficits ranging from 1½-2 years except Mary whose academic skills were only ½ year below grade level. All were considered poor at accessing other peers as resources and David, especially, was considered a disruptive influence on his classmates.

DEPENDENT MEASURES

All four dependent measures were obtained in the same manner as Experiment I. In this experiment however, the sociometric and the self-assessment were only obtained twice (Baseline 1 and after the Package condition).

TREATMENT CONDITIONS

In this experiment, the experimental class was exposed to a reversal research design (A, B, D, E, D, A, F) that may be observed in Table 3. In this experiment, students were first exposed to an Academic Contingency and then to a Package (Academic + Social Contingencies). Thus, the unique effect of the social contingency was examined through the return to an "only" Academic Contingency condition.

The specific order of treatment was as follows:

A) Baseline 1 - same as in Experiment I.

B) Task Interdependence - same as in Experiment I.

D) Academic Contingency 1

During the intervention, the task/goal interdependent groups remained in effect. The teacher explained the following:

"Some of you may wonder how you ended up in your vocabulary groups. Actually, they were made up in as fair a way as possible with each group having a combined quiz grade of about 70%. From now on, your group will receive an opportunity to earn the following bonus. If all members of your group get 80% or more on your individual Friday

quiz, each group member will receive two extra points toward your quiz grade." (Criterion of 80% was higher in this experiment than in Experiment I due to higher baseline scores.)

Note: The Academic Contingency in this experiment is exactly what was added to the Package condition in Experiment I.

E) Package

Same as in Experiment I though in this case it was the group Social Contingency that was added.

D) Academic Contingency 2

This was reinstated when the social contingency was withdrawn. Students were informed that they had done so well they no longer needed a social skills contingency.

A) Baseline 2 - same as Experiment I.

G) Postchecks - same as Experiment 1.

RESULTS (Experiment II)

No discrepancies were found in spotchecks made on the grades given on the permanent product vocabulary quizzes. For Peer Social Interaction (PSI) a total of eight measures of agreement were taken for each of the target students. For David, reliability ranged from 80%-100% with a mean of 90.0%. For Ron, reliability ranged from 80%-100% with a mean of 96.1%. For Mary, reliability ranged from 80%-100% with a mean of 95.0%. For Erik, reliability ranged from 90%-100% with a mean of 98.8%. Total reliability was 95.1%.

Quiz Scores

Students in this study began with higher Baseline 1 quiz scores than students in Experiment I (range = 65%-81%). All four target learners gained (in Baseline 2) as a result of the interventions (range 73%-86%), but there

was not one intervention that improved scores for all target learners. With Task Interdependence, three out of four students improved (mean gain = 4 points). With Academic Contingency, two out of four students improved (mean gain = 2 points). There was no reversal effect for the academic behavior of student Quiz Scores.

Peer Social Interaction

For PSI the data in Figure 3 indicates that these four students were

Insert Figure 3

somewhat less isolated (range No PSI - 45%-75%) than those targeted in Experiment I. Both Mary (12%) and David (18%) had demonstrated some history of Negative PSI and were considered behaviorally problematic by the teachers during Baseline 1.

As indicated in Figure 3, David was most responsive to the addition of the social contingency (Package). His decrease in No PSI (45%) was accompanied by an increase in Task PSI (42%). Ron was most dramatically effected by the Package as well, demonstrating an increase in Task PSI of 55% with a concommitant decrease of No PSI of 27%. Mary was immediately effected by the use of Task Interdependence (without contingencies) with a decrease in No PSI (44%) and an increase in Task PSI (27%) and Maintenance PSI (17%). Erik showed the most sporadic response to the interventions with improvements as a result of Task Interdependence and Package, but a deterioration with the Academic Contingency. Of note, is that Erik's academic grades improved most while his Task and Maintenance PSI improved during the Package Contingency.

From Figure 3 it can be observed that Negative PSI dropped after Task Interdependence for all four students. No PSI dropped for all four students

in the experiment in both Task Interdependence and Package conditions. Package was noted for the lowest rates of No PSI (range = 0-14%). Task PSI increased for all four students with Task Interdependence and again for all four students with Package. Maintenance PSI increased for all four students with Task Interdependence.

This experiment was not noted for reversal effects as a result of the addition of the social contingency (Package). For example, only two out of four Task PSI effects and two out of four Maintenance PSI effects could be interpreted as reversals as a result of the removal of the social contingency. There is some evidence that these skills were maintained after the interventions were no longer in effect by the targeted students. For example, three out of four students (all except Erik) in Baseline 1 and three out of four students (all except Mary) at the six-week Postchecks had similar rates of Task and Maintenance PSI to those demonstrated while both contingencies (Package) were employed. When compared with Baseline 1 rates, student PSI showed improvements in all cases during the Postchecks period range of decrease No PSI = 24%-68%.

Other Measures

Sociometric results (see Table 5) indicate little if no change in student perceptions of their peers in their class. Similarly, student self-assessment results (see Table 6) also do not provide evidence that student perceptions of their vocabulary lesson nor their participation in these lessons had changed to any substantial degree.

DISCUSSION

These results support the role of group contingencies for improving both social and academic behavior of middle school students. Results from Experiment I

suggest that academic behavior was under experimental control of the Academic Contingency (added to form Package) and appeared to maintain at improved rates after contingencies were in place. There is less evidence for cross generalization, i.e., effect of academic contingencies on social behavior or the effect of social contingencies on academic behavior through an Analysis of Covariance may be statistically informative on this issue.

The maintenance of (especially social) behavior was a surprisingly significant outcome of this study. Indications were that student isolated and disruptive behavior could be modified to a point that contingencies were no longer necessary to maintain improvements in these characteristics. After 10 weeks of no contingencies (or groups), students still demonstrated high rates of Task PSI and Maintenance PSI functioning. It appeared almost as a self-perpetuation process. Students learned they were actually resources for one another despite the fact that teachers were no longer directly teaching while using groups or group contingencies. It had become self-reinforcing, part of the classroom repertoire of behavior.

One definite advantage of the academic and social contingencies employed in this study is their applicability to real school based needs. Classroom teachers are being asked to work with increasingly heterogenous populations of students, while at the same time they are being asked to meet individual needs of students. While many teachers may support the concept of mainstreaming, they do not feel they have the tools nor the training to make it work. In this study, conducted in regular classes, special needs students were able to receive individualized support and attention from their peers with structured guidance from their teachers. Peers could be utilized to establish group norms compatible with teacher directed academic and social goals through the use of naturalistic incentives. The most powerful effects occurred when students were taught in groups receiving both academic and social group contingencies. Though academics are clearly seen as having primacy in the school setting, the

results of these studies suggest it may be worth teacher's time to strengthen the social/interpersonal skills of students. Though the efficacy of social skill training has been demonstrated by behavioral psychologists in clinical settings (e.g., Goldstein, 1981; Kelly, Wildman, Urey, and Thurman, 1980), there have been very few applications that could realistically be incorporated within a regular classroom setting. Whereas some authors (e.g., Aronson, et. al., 1978) have suggested a two-week training period, during which the teacher invests time away from lessons in order to get students adapted to groups, this may not be realistic in the schools. This study on the other hand did not necessitate much time away from lessons, and resulted in teachers feeling that students could finally perceive each other as resources when completing academic assignments.

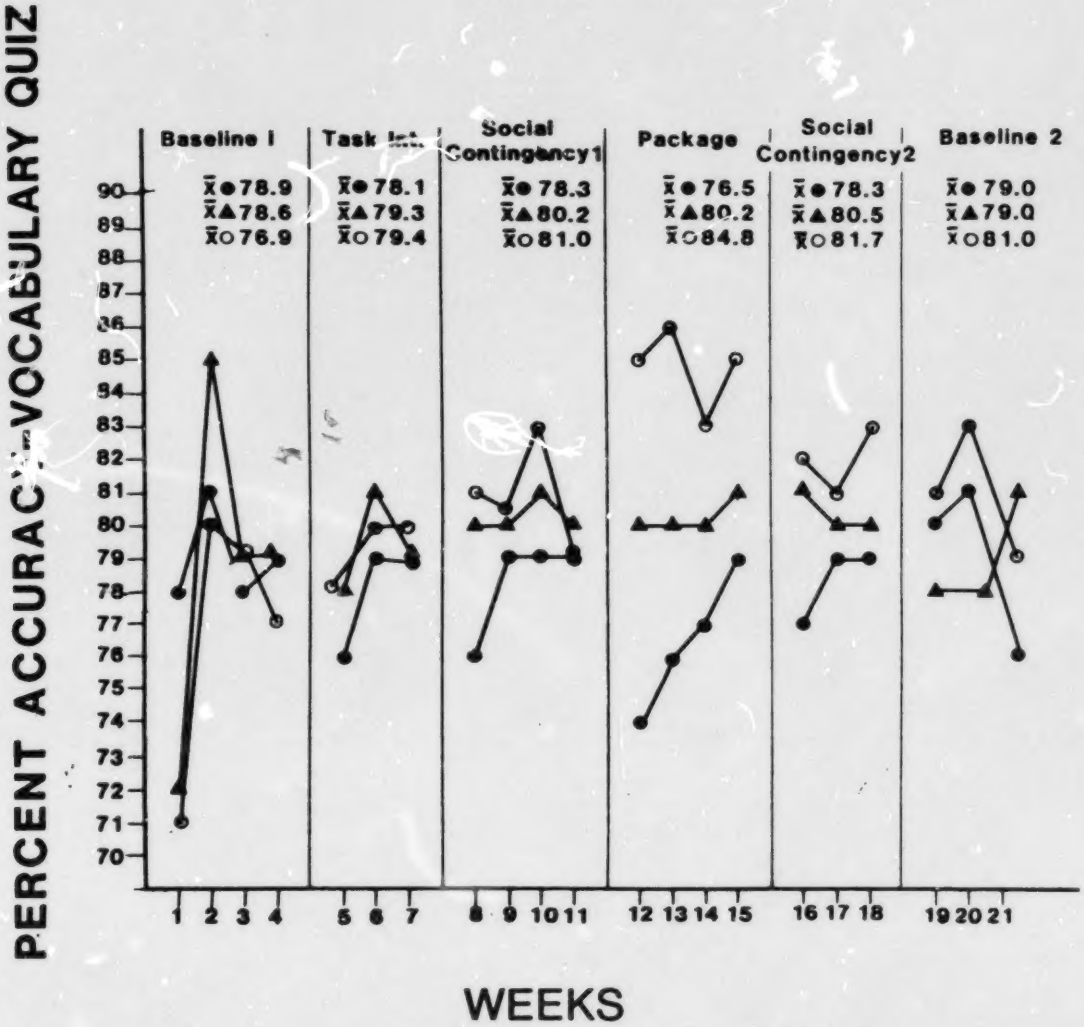
Though the research designs employed in this study did not directly address the role of Task Interdependence (no contingencies), there was evidence for a reduction in student isolation for five of six students in that condition. It would seem unlikely, however, that students exposed to only Task Interdependence would have maintained their social interactions (PSI) to the same extent that these students (exposed to contingencies) maintained their social interactions. Without the contingencies, it is probable that, the groups would have disintegrated due to the fact that students would neither have the skills nor the incentive(s) to work together. There is well documented research on "failing" groups (Ames and Fleker, 1979) which suggests that students who were members of failing groups internalized their experiences and made harsh judgements against other group members involved. To the extent that we can redefine failing groups as ones in which members have not learned the skills to make a group work or are unmotivated to exercise these skills, the use of contingencies as described in this study can be very useful.

Finally, the inconsistent results from both the sociometric and self-assessment measures deserve a word of explanation. In Experiment I, socio-

metric and self-assessment results corroborated PSI results and suggested that targeted students gained in the eyes of their peers while all class members improved their view of both the class lessons and their class contribution. In Experiment II, no experimental improvement was found on the sociometric or self-assessments. It is possible this difference is due to the fact that Experiment II was done in a 6th grade "intact" class. Thus, students remained together for a greater portion of the day and it is less likely that attitudes towards peers or self for that matter, would have been malleable.

Figure 1

The Comparative Effect of Three Cooperative Learning Conditions upon the Academic Quiz Performance of Three English Classes



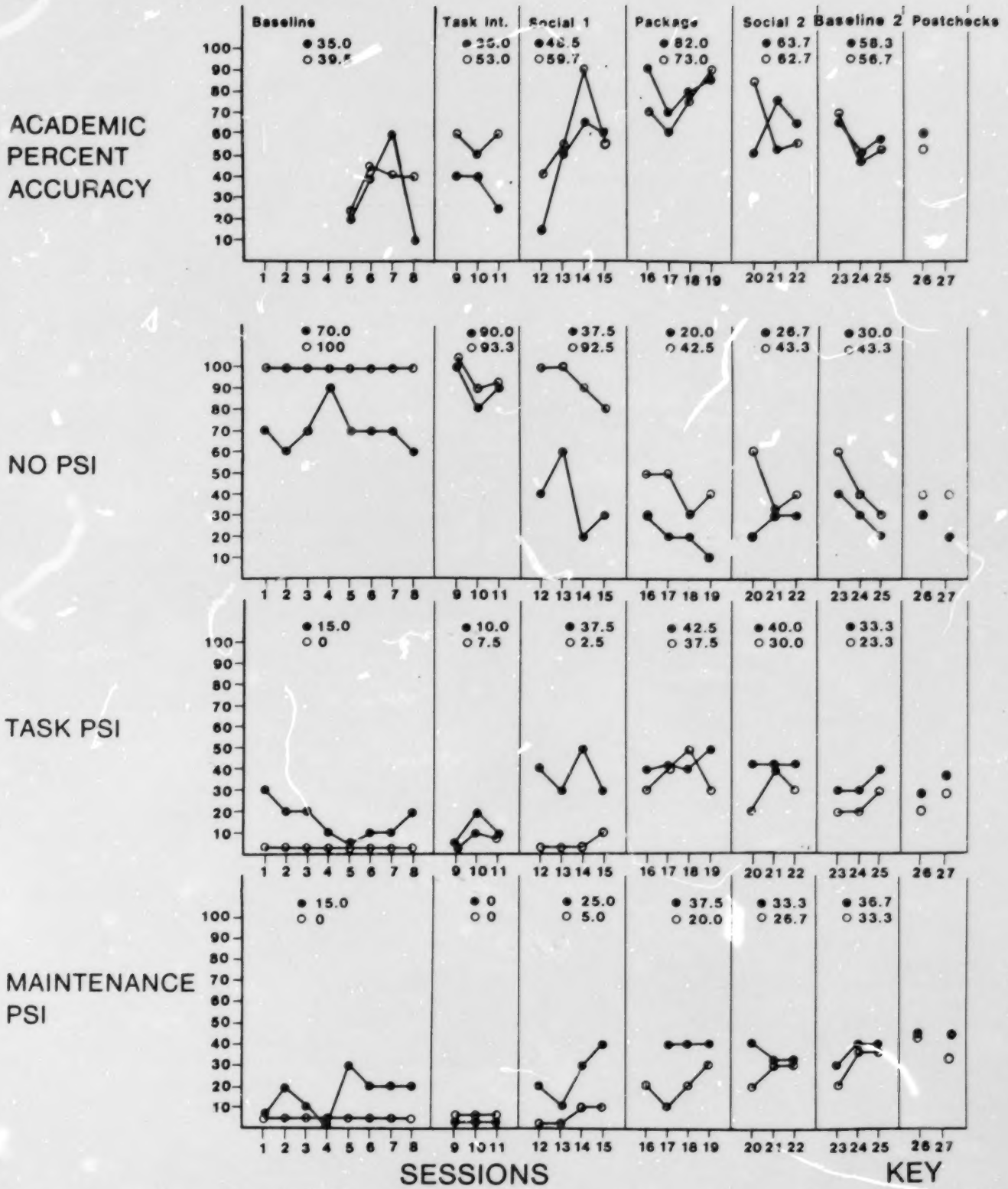
KEY

● Control Group (Per 8)
No Treatment

▲ Cooperative Learning
(only task interdependence)
No contingencies (Per 6)

○ Exp. group - coop. groups - contingencies (Per 3)

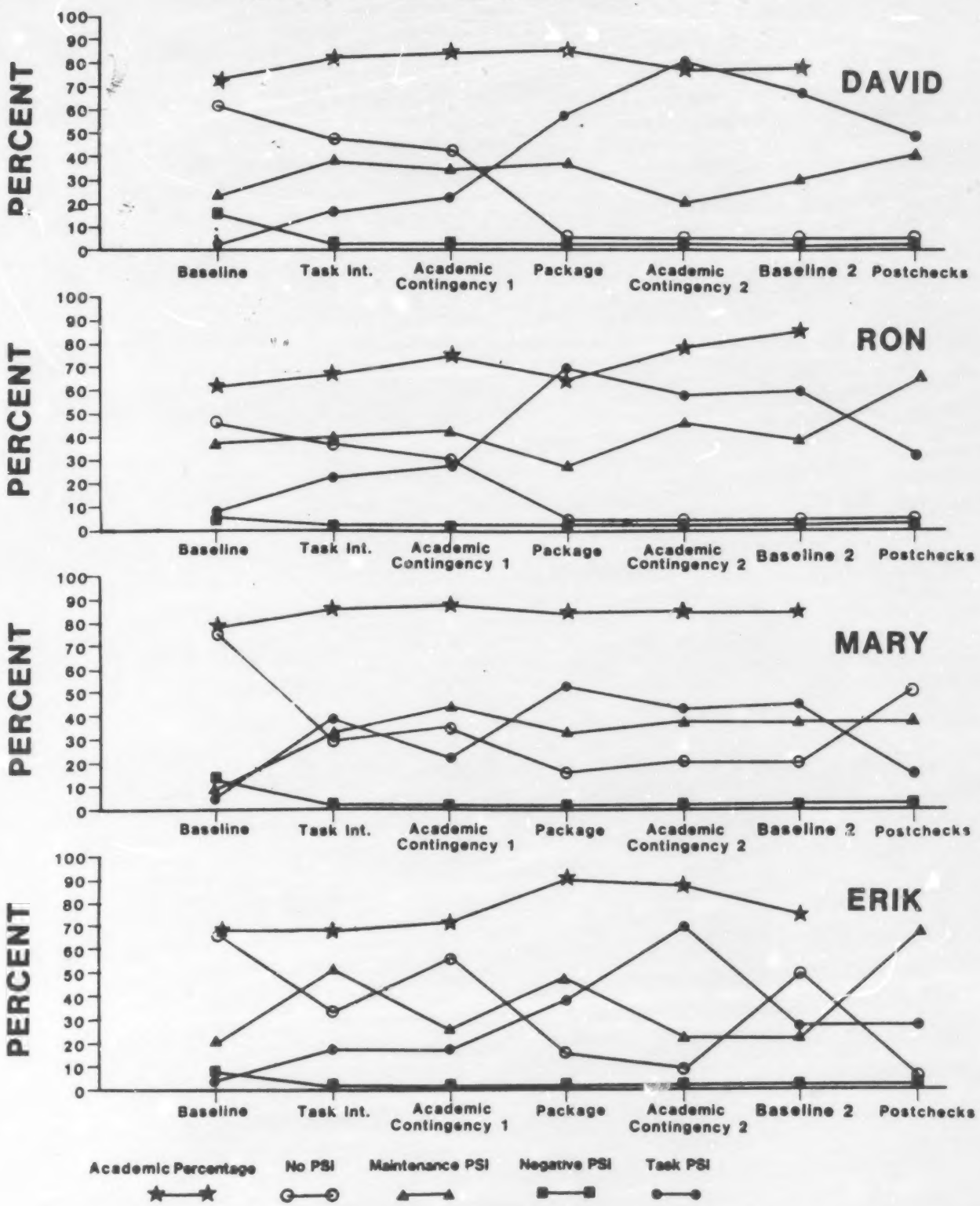
Figure 2



The Effects of Three Types of Cooperative Learning Conditions on the Peer Social Interaction and Academic Percentage upon Two Isolated Students

Figure 3

Condition Means of Four Students for Peer Social Interaction and Academic Percent Accuracy in a Sixth Grade English Class



Sociometric Assessment

WRITE DOWN YOUR CHOICE OF PARTNERS TO THE FOLLOWING QUESTIONS.
YOUR CHOICE MUST BE A MEMBER OF THIS CLASS.
IF YOU HAD A 5 PAGE REPORT TO DO, WHICH MEMBERS WOULD YOU:

MOST LIKE TO WORK WITH?	LEAST LIKE TO WORK WITH?
1.	1.
2.	2.
3.	3.

IF YOU WERE ON A SHORT FIELD TRIP WITH JUST A FEW OTHER STUDENTS, NAME THE ONES YOU'D:

MOST LIKE TO GO WITH.	LEAST LIKE TO GO WITH.
1.	1.
2.	2.
3.	3.

IF YOU WERE SITTING ALONE AT LUNCH AND OTHER STUDENTS CAME OVER TO SIT NEXT TO YOU, NAME THE ONES YOU'D:

MOST LIKE TO SIT NEXT TO.	LEAST LIKE TO SIT NEXT TO.
1.	1.
2.	2.
3.	3.

TABLE 1

Self Assessment

PLEASE EVALUATE THE FOLLOWING ON A SCALE OF 1 (STRONGLY DISAGREE) TO 5 (STRONGLY AGREE) BY CIRCLING THE CORRECT NUMBER.

	STRONGLY DISAGREE				STRONGLY AGREE
1. I FEEL LIKE I'M REALLY ENJOYING VOCABULARY.	1	2	3	4	5
2. I FEEL LIKE I'M GETTING ALL THE HELP I NEED IN VOCABULARY.	1	2	3	4	5
3. I FEEL LIKE I'M IMPROVING IN MY VOCABULARY.	1	2	3	4	5
4. I FEEL LIKE I'M REALLY CONTRIBUTING IN VOCABULARY.	1	2	3	4	5
5. I FEEL LIKE I'M GETTING THE GRADE I DESERVE IN VOCABULARY.	1	2	3	4	5

TABLE 2

Experiment I

Conditions			Weeks
A_1	-	BASELINE	4
B	-	TASK INTERDEPENDENCE	3
C_1	-	SOCIAL CONTINGENCY	4
E	-	PACKAGE	4
C_2	-	SOCIAL CONTINGENCY	3
A_2	-	BASELINE	3
F	-	POSTCHECKS	2
Total			23

TABLE 3

Experiment II

Conditions			Weeks
A_1	-	BASELINE	8
B	-	TASK INTERDEPENDENCE	3
D_1	-	ACADEMIC CONTINGENCY	4
E	-	PACKAGE	4
D_2	-	ACADEMIC CONTINGENCY	4
A_2	-	BASELINE	3
F	-	POSTCHECKS	2
Total			28

MONITORING CHECKLIST

DATE: _____

SKILLS		NAMES OF GROUP MEMBERS				
PRAISING	ENCOURAGES FELLOW GROUP MEMBERS BY MAKING POSITIVE COMMENTS, GOOD EYE CONTACT, AND FINDING AGREEMENTS IN THE GROUP.					
CONTRIBUTING	PARTICIPATES IN DISCUSSION BY SHARING IDEAS AND INFORMATION					
DIRECTING	KEEPS THE GROUP ON TASK AND ASKS QUESTIONS RELATED TO TASK					
CHECKING	MAKES SURE EVERYONE IN THE GROUP UNDERSTANDS WHAT IS BEING TAUGHT					
TOTAL						

INSTRUCTIONS : PLACE A CHECK NEXT TO EACH STUDENT WHO EXHIBITS A SOCIAL SKILL, BONUS POINTS ARE GIVEN TO A GROUP ONLY IF EACH MEMBER RECEIVES AT LEAST THREE OUT OF FOUR CHECKS (✓'s).

TABLE 4

TABLE 5

Sociometric Measure

Kristi

	I	II	III
MORE SUCCESSFUL	2	5	5
LESS SUCCESSFUL	9	6	4

Rene

	I	II	III
MORE SUCCESSFUL	1	7	5
LESS SUCCESSFUL	7	5	4

David

	I	II
MORE SUCCESSFUL	1	3
LESS SUCCESSFUL	0	15

Ron

	I	II
MORE SUCCESSFUL	5	4
LESS SUCCESSFUL	0	0

Mary

	I	II
MORE SUCCESSFUL	12	17
LESS SUCCESSFUL	1	1

Eric

	I	II
MORE SUCCESSFUL	2	1
LESS SUCCESSFUL	11	12

TABLE 6

Self Assessment Measure

ALL STUDENTS IN THE TWO EXPERIMENTAL CLASSES RATED EACH OF FIVE STATEMENTS FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5). BELOW ARE THE AVERAGE (MEANS) RATINGS PER STATEMENT. MEASURES WERE OBTAINED THREE TIMES (I - BASELINE, II - AFTER PACKAGE, III - POSTCHECKS) DURING EXPERIMENT I AND TWICE (I - BASELINE, II - AFTER PACKAGE) IN EXPERIMENT II.

Statements	Experimental Class	I	II	III
1. I FEEL LIKE I'M REALLY ENJOYING VOCABULARY.	I	2.3	4.1	3.7
	II	3.0	3.0	
2. I FEEL LIKE I'M GETTING ALL THE HELP I NEED WITH VOCABULARY.	I	2.7	4.2	3.3
	II	4.1	3.8	
3. I FEEL LIKE I'M IMPROVING IN MY VOCABULARY.	I	3.1	4.5	4.0
	II	3.8	4.0	
4. I FEEL LIKE I'M REALLY CONTRIBUTING IN VOCABULARY.	I	2.1	4.3	3.4
	II	3.5	3.7	
5. I FEEL LIKE I'M GETTING THE GRADE I DESERVE IN VOCABULARY.	I	3.4	4.2	3.9
	II	3.8	4.3	

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